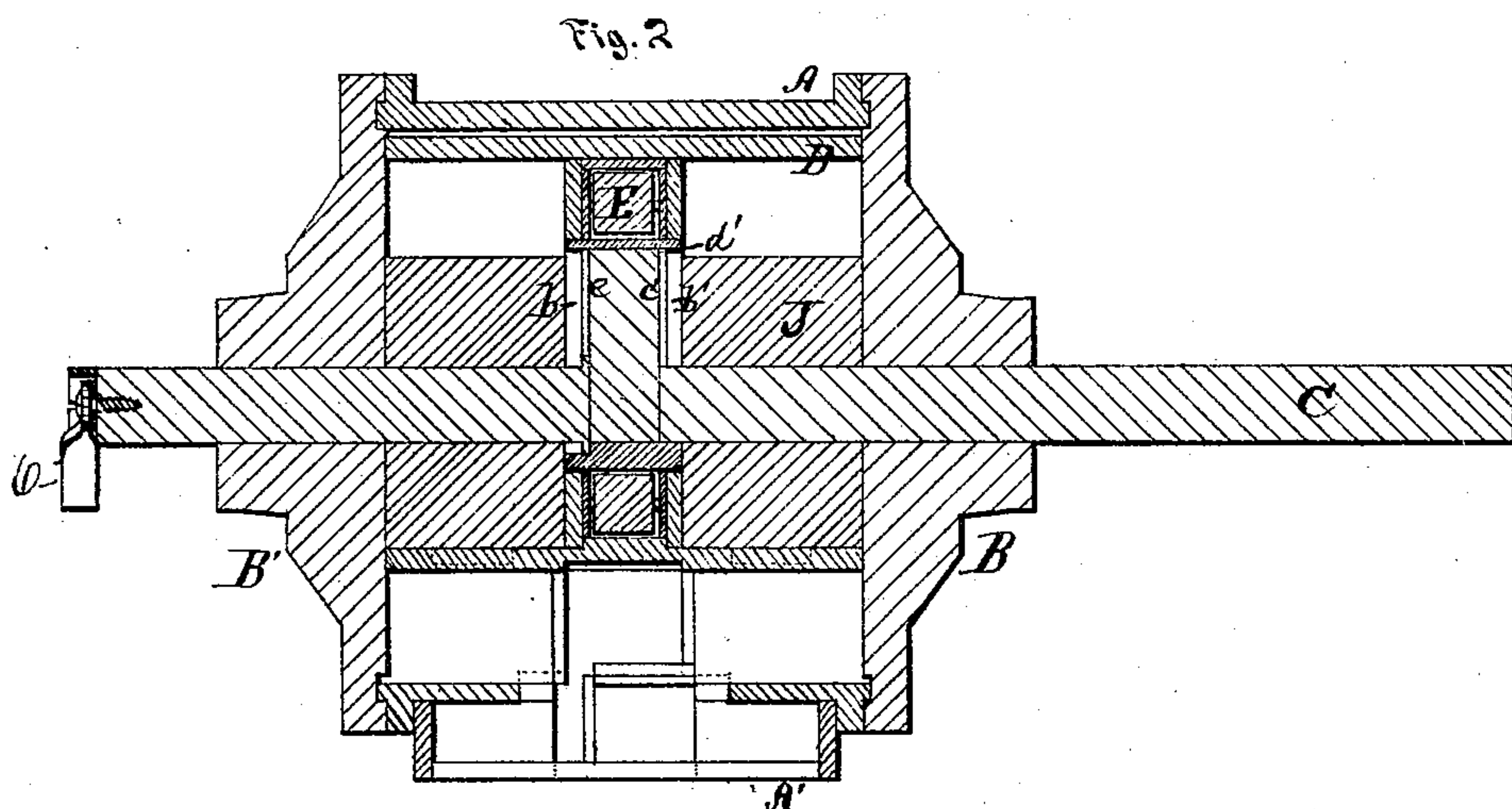
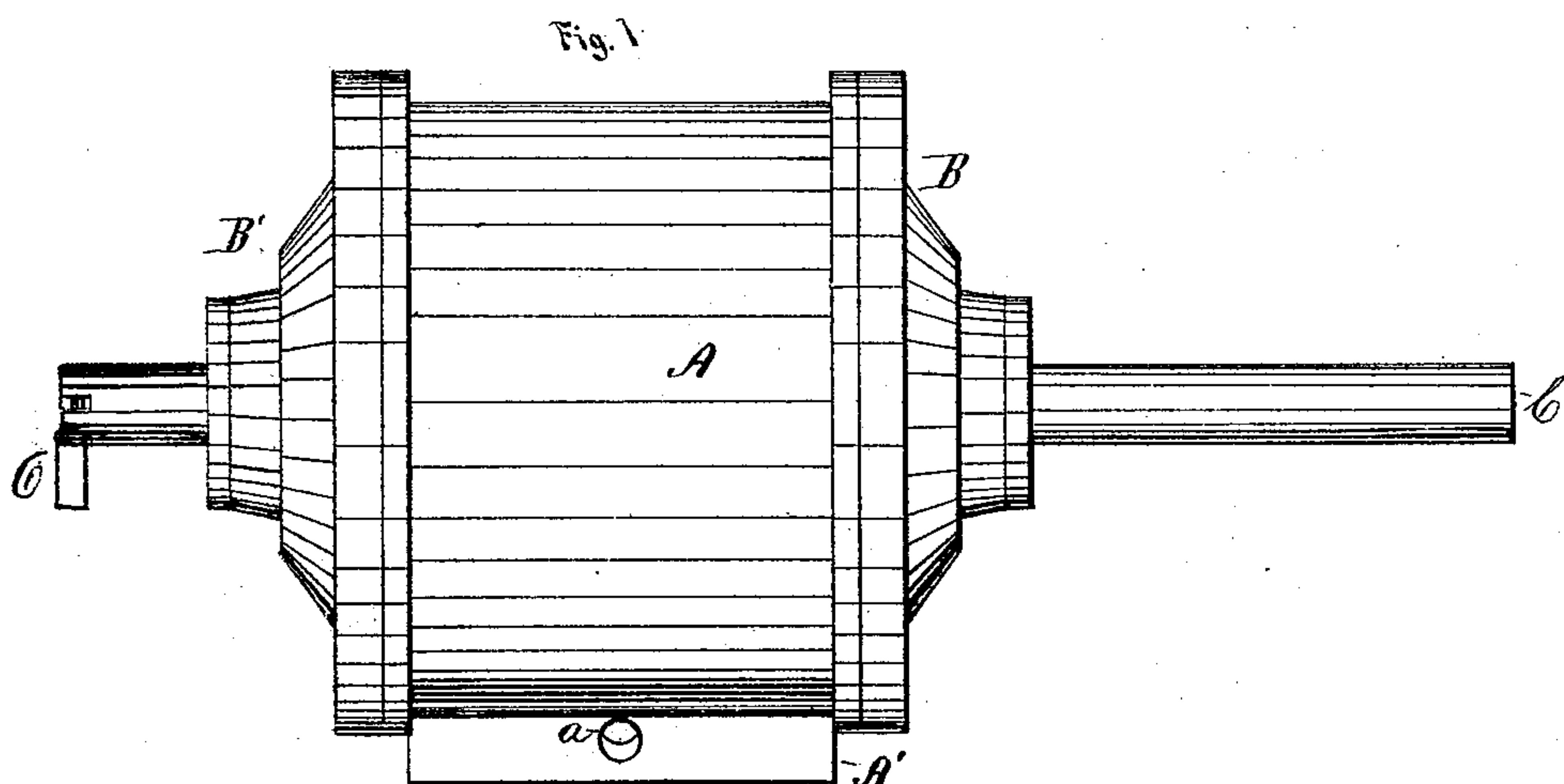


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Improvement in Rotary-Engines.

No. 127,667.

Patented June 4, 1872.



Witnesses.

*R. M. Steele*  
*Charles Clark*

Inventor.

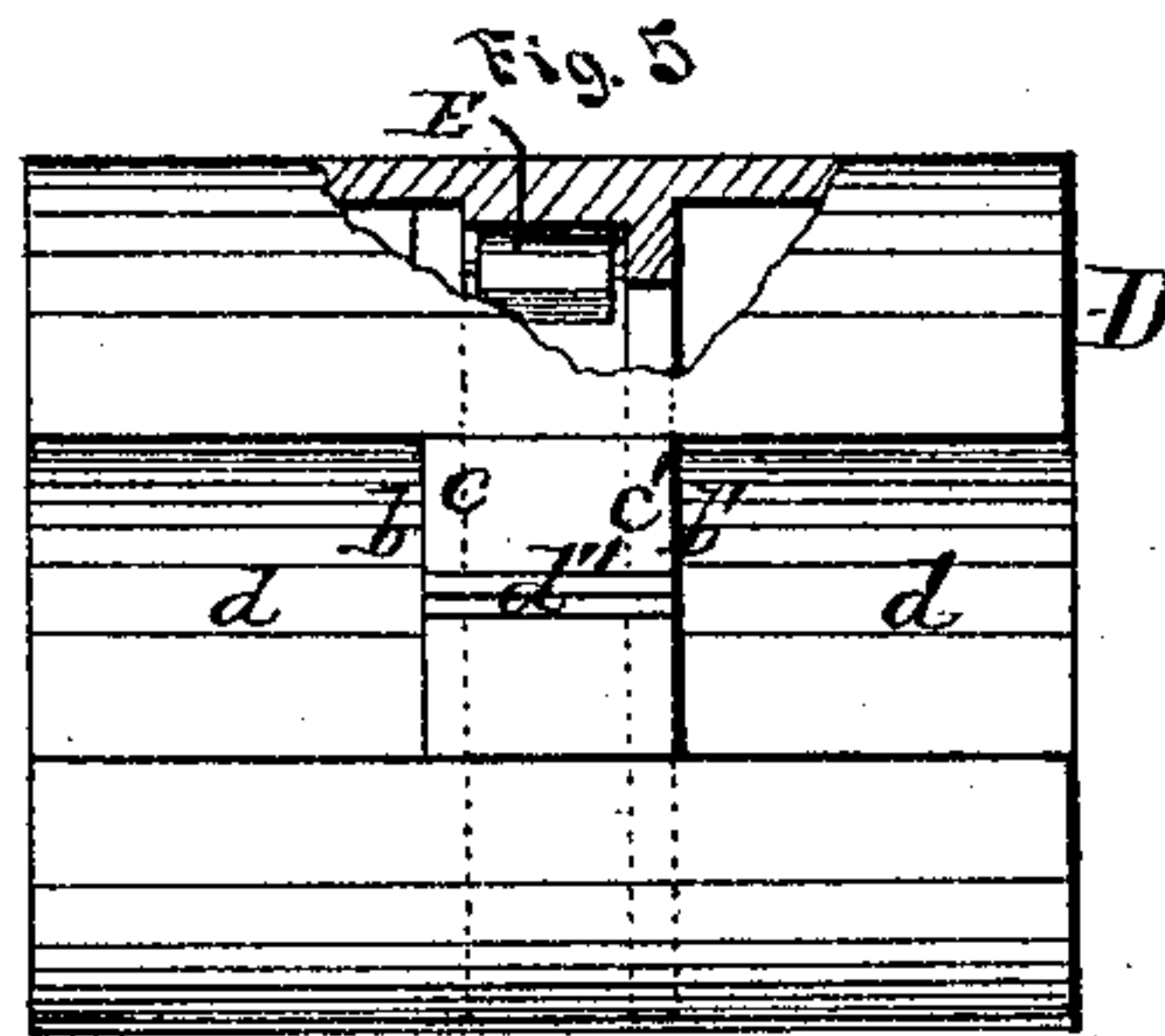
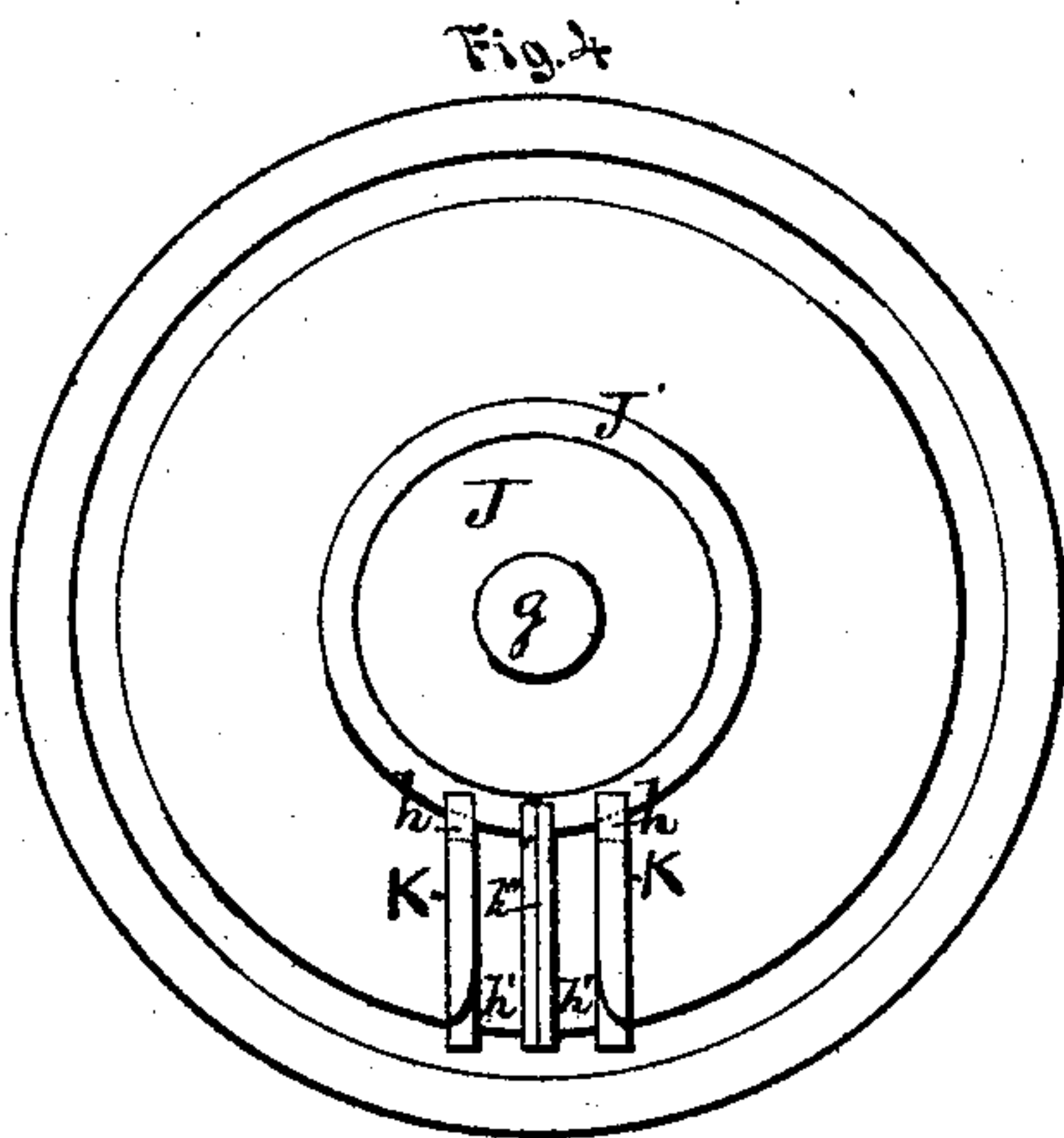
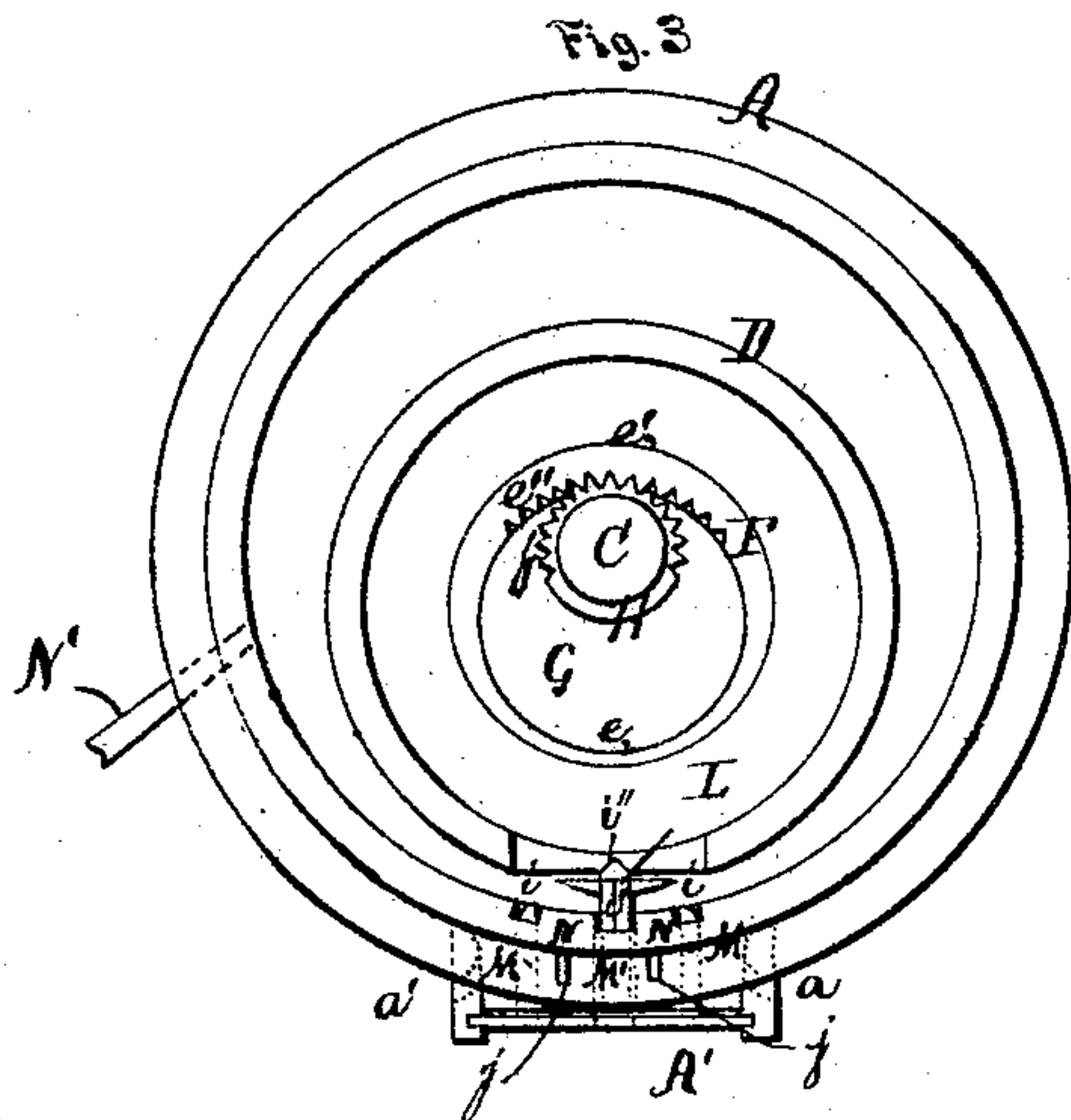
*Gustavus R. Winkler*  
*by Dyer, Beadle & Co*  
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# UNITED STATES PATENT OFFICE.

GUSTAVUS R. WINKLER, OF WILLIAMSPORT, PENNSYLVANIA.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 127,667, dated June 4, 1872.

### SPECIFICATION.

*To all whom it may concern:*

Be it known that I, GUSTAVUS R. WINKLER, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Rotary Steam-Engines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The object of my invention is an improvement of the construction of the rotary steam-engine for which Letters Patent of the United States numbered 123,320 were granted to me January 30, 1872, whereby friction of parts and leakage of steam are avoided in a great measure; and the invention consists in the construction and arrangement of the various parts intended to produce these results, which parts consist in a novel form of the scroll-piston, containing upon its interior friction-rollers in a cylindrical shell, which is rotated within and by said piston by friction of surfaces; in an eccentric secured to the shaft, which is rotated within and by said shell by means of teeth upon said shell and upon the shaft; and in the peculiar devices by which the live steam is admitted, gives an oscillation to the piston, which, in turn, by friction, gives a rotation to the shaft and exhausts, operating in either direction, at will, all as more particularly herein-after described.

To better understand the construction and operation of my device, reference is had to the accompanying drawing making a part of this specification, in which—

Figure 1 is an elevation of my engine; Fig. 2, a central vertical longitudinal section of the same; Fig. 3, an end view with one of the ends removed; Fig. 4, a view of the inside of one of the ends; and Fig. 5, a separate view of the piston with a portion of one of its walls broken away so as to expose one of its friction-rollers.

Like letters of like kinds denote corresponding parts in each figure.

In the drawing, A represents the casing of the engine, cylindrical in form, with a rectangular base, A', having exhaust-ports *a* and *a'* upon the sides of the same of similar size. B and B' represent the heads thereof, and C the main shaft, from which power is communicated. Within the casing is contained the pis-

ton D, which is scroll-shaped or cylindrical in form, with a part of the periphery at each end removed, having two parallel, vertical, annular diaphragms, *b* and *b'*, between which are arranged casings *c* and *c'*, upon which are journaled the friction-rollers E. Between the diaphragms and the ends of the piston are chambers *d*, through the diaphragms a circular opening, *d'*, Fig. 2, and a notch, *d''*, Fig. 5, in the center of the piston. Within this opening, running freely, and fitting it longitudinally, is a ring, F, gradually increasing in thickness from a point, *e*, to a point, *e'*, and upon the inner part of the thickest portion provided with teeth *e''*. A cylindrical block, G, eccentrically secured upon the shaft C, fits the cavity in the ring F, and a sleeve, H, upon said shaft, has its inner end provided with a toothed ring, *f*, which engages with the teeth of the ring before named. A cylindrical hub, J, upon the inner center of each head B B', provided with an opening, *g*, in which the shaft turns, has secured upon it a sleeve, J', to which in turn are secured partitions K, three in number, the outer ones having ports *h* and portions *h'* cut away from their inner lower edges next to said sleeve, the ends of said partitions not cut away fitting in corresponding grooves in the casing A. The central partition has upon each edge a longitudinal groove, *h''*. L is a follower, having lateral wings *i* extending over the contiguous parts, a body, *i'*, playing up and down in the central port, hereafter described, and an angular head, *i''*, which fits into the notch *d''* before named, and angular edges which fit into the grooves *h''*. Through the bottom of the base A are longitudinal steam-ports, of which the outer ones are designated by the letter M, the central one by M', and two outer mediate grooves by N, provided with suitable valves *f*. By the ports M steam is introduced to operate the engine; by the port M' steam forces the follower with a constant pressure against the piston, the angular head of the follower engaging with the notch in the piston, which operation is aided by the steam escaping around the body of the follower reacting in the groove N and passing out into the casing through the cut-away portions and the ports of the partitions already described, and condensed by the cold-water jet-pipe N'. The notched edges of the



follower move up and down in the grooves in the central partitions. A key, O, upon the outer end of the shaft, fitting into proper slots in the sleeve H, serves to secure the shaft and sleeve together, and serves to regulate the positions of the toothed ring upon said sleeve.

In the operation of my device, the live steam entering one of the ports M causes the piston to oscillate within the casing, alternately admitting live steam on one side of the partitions and exhausting on the other. This oscillation is eccentric in its orbit, by reason of the eccentric-block upon the shaft. By means of this eccentric oscillation a friction is produced by the sides of the opening in the piston against corresponding portions of the ring F, the point of greatest pressure continually changing, whereby a rotary movement is given to said ring, which in turn communicates a similar movement to the eccentric-block and the shaft secured to it.

Having thus described the construction and operation of my engine, what I claim as new therein and my own invention is—

1. The follower L provided with lateral wings, and constructed and operating substantially as described.

2. In a rotary steam-engine, the means employed to rotate the shaft, consisting of the scroll-piston D provided with friction-rollers, loose ring F, and eccentric G, constructed and operating substantially as described.

3. In a rotary steam-engine, the means employed to oscillate the piston, consisting of the ports M, partitions K, and follower L, constructed and operating substantially as described.

4. The combination of the shaft C, the sleeve H provided with the toothed ring *f* and the loose ring F, constructed and operating substantially as described.

This specification signed and witnessed this 1st day of April, 1872.

G. R. WINKLER.

Witnesses:

HENRY W. WATSON,  
ADOLPH MMEYA.